Name _____ Pd _____ Date _____

Statistics Test

1. Invent a data set that matches the following description: 6 values, mean = 17, mode = 13, and median = 15

                                       ___,   ___,   ___,   ___,   ___,   ___

2. For the given data set, find the **mean,** the **deviation from the mean** for each value listed, the **variance** and the **standard deviation.**

$$\{42, 36, 38, 37, 41, 43, 51, 56, 32\}$$

mean _____

variance _____

standard deviation _____

deviation of 38 _____

deviation of 56 _____

3. The heights of 200 children were recorded on their first birthdays. The heights are normally distributed with mean 28 inches and a standard deviation 1.5 inches.

   a)   What is the **probability** that a randomly selected child will have a height less than 26 inches?   _____

   b)   What is the **probability** that a randomly selected child will have a height more than 30 inches?   _____

   c)   **How many** of the 200 children would you expect to have a height between 26.4 and 29.8?   _____

   d)   Find the height with a z-score of -1.5.   _____

   e)   Find the z-score of a 31 inch height.   _____

   f)   Find the 99% (z = 2.576) confidence interval.   _____

4. What percentage of data would you expect to find above the mean or between the mean and two standard deviations below the mean?

                                                                   _____

5. Suppose that you have a data set containing 656 test scores. **How many test scores** would you expect to find matching each description?

a. above the median _____

b. below the 3rd quartile _____

c. between the median and 3rd quartile _____

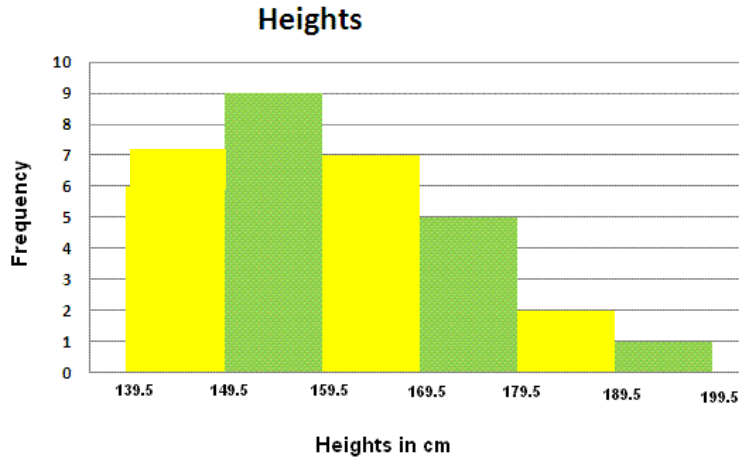6. Find the value of x so that the mean of {3, 5, 7, 8, x} is 10. _____

7. Use the histogram below to answer the following questions.

    a) How many data values are in the set? _____

    b) What bin contains the median? _____

    c) What percentage of people in the study are less than 159.5 cm? _____

    d) What is the bin width? _____

Heights

Heights in cm

8. Give the 5-# summary, range, and IQR. Draw a box plot for the data (make sure to label number line) and describe if the data is skewed (which way) or symmetrical.

{45, 16, 70, 52, 55, 42, 57, 39}

5# Summary _____

Range _____

IQR _____

Skewed (which way, if any) _____

9. For the data below, find the measures of central tendency (label), the standard deviation and the outliers (if any).

{24, 45, 56, 53, 42, 48, 73, 54}

_____

_____

_____

standard deviation _____

outliers _____

    a) Remove the outliers (if any), and recalculate the mean and the standard deviation.

mean _____

standard deviation _____

10. Match each description with the correct sample survey or study.

   A. A pollster on a college campus wants to find out the attitudes of students on their campus about immigration. The pollster chooses to sample students from every region of the country (West, East, North, South). The pollster wants to interview 10% of the population from each of the sub-groups or regions.

   B. To obtain information about the drug habits of all high school students in a state, a pollster wants to obtain a list of all the school districts in the state and select a random sample of school districts. The pollster plans to interview only a select number of high school students from only 3 school districts.

   C. Time Warner Cable sends out a survey to its customers, wanting them to rate their service. Customers can fill out the survey and return it through the mail.

   D. A student wants to find out how much learning actually happens in his history classroom. The student decides to gain information and he strolls into one of his class periods and asks other students questions concerning the matter.

   E. A biologist decides to study the behavior of dogs at Tanglewoof by sitting on a bench in the dog park, taking notes on how the dogs interact with each other.

   F. A teacher wants to find out which new question on a test is the hardest. The teacher hands out two forms of the test, one test with a question from a previous test and the other test that has the new question. He then compares the grades.

   Voluntary Sample _____   Convenience Sample   _____

   Experimental Study _____   Stratified Random Sample   _____

   Cluster Sample _____   Observational Study   _____

11. The scores of 36 students on a recent geography test are in the table. If Louis got an 80 on the test, **what percentile** would that score represent?

85	68	95	66	73	67
87	63	69	48	96	56
46	47	93	75	88	56
49	65	60	54	73	64
71	80	86	98	69	90
48	76	62	92	88	72

Percentile Rank of 90 _____

12. 740 out of 1000 students scored **at least 45 points** out of 70 on a standardized test. Find the **percentile rank** of a student who scored 45 points on the test.

Percentile Rank of 40 points _____

Consider the following data set: {3, 7, 6, 10, 11, 12, 15, 7, 6, 13, 10}

13. Find the **mean, median, 5 # summary, and standard deviation.**

mean _____

median _____

5 # summary _____

standard deviation _____

14. Increase each of the 11 values by **6**. Now find the **mean, median, 5 # summary, and standard deviation** for your new data set.

mean _____

median _____

5 # summary _____

standard deviation _____

15. Take the original data and _**triple**_ each value. Now find the **mean, median, 5 # summary, and standard deviation** for your new data set.

mean _____

median _____

5 # summary _____

standard deviation _____

16. Using #13, #14, and #15 as reference, what is affected when you add values and why is that so? What is affected when you multiply the values and why is that so?